

IMPACT OF ARTIFICIAL INTELLIGENCE ON CATALOGUING EFFICIENCY AND STAFF PRODUCTIVITY IN UNIVERSITY LIBRARIES IN BENUE STATE, NIGERIA

Martins Vershima Tolough (CLN)

Department of Library and Information Science,
Rev. Fr. Moses Orshio Adasu University, Makurdi, Benue State, Nigeria.

and

Dr. Hungwa Shidi

Department of Library and Information Science,
Rev. Fr. Moses Orshio Adasu University, Makurdi, Benue State, Nigeria.

Abstract

This study examined the application of Artificial Intelligence (AI) for enhanced cataloguing efficiency and staff productivity in University Libraries in Benue State, Nigeria. Two research questions and two null hypotheses guided the study. A descriptive survey research design was adopted for the study. The population comprised 8,009 respondents, consisting of library users and staff drawn from three University Libraries in Benue State, Nigeria. A sample size of 240 respondents was selected using the proportionate sampling technique. Data were collected using the Application of Artificial Intelligence for Enhanced Cataloguing Efficiency and Staff Productivity Questionnaire (AAIECSPQ) and analysed using mean, standard deviation, and Chi-square statistics at the 0.05 level of significance. The findings revealed a low extent of application of Artificial Intelligence for enhanced cataloguing efficiency (Cluster Mean = 2.43) and staff productivity (Cluster Mean = 2.48) in the University Libraries studied. The hypotheses tested showed no significant difference in respondents' opinions regarding the application of Artificial Intelligence for enhanced cataloguing efficiency and staff productivity in University Libraries in Benue State. The study concluded that the extent of application of Artificial Intelligence in University Libraries in Benue State remains low. The study recommended the provision of adequate ICT infrastructure, effective integration of Artificial Intelligence tools into library operations, continuous staff training and capacity building, and stronger institutional support to facilitate wider application of Artificial Intelligence in University Library services.

Keywords: Artificial Intelligence, Cataloguing Efficiency, Staff Productivity, University Libraries, Benue State.

Introduction

The contemporary information environment has witnessed unprecedented technological advancement, fundamentally transforming the operations, functions, and service orientation of libraries across the world. Libraries are no longer regarded merely as repositories of knowledge but as dynamic institutions that facilitate access to information through innovative technologies and user-centred services. The increasing digitization of information resources, coupled with the changing expectations of users, has compelled libraries to rethink traditional practices and embrace technological innovations capable of enhancing efficiency, accessibility, and service quality. Consequently, library professionals are increasingly required to develop new competencies and adapt to emerging technological trends in order to remain relevant within the evolving knowledge society. Arora et al. (2020) observed that libraries globally are increasingly adopting innovative approaches to respond effectively to the changing landscape of information creation, dissemination, and utilization.

Academic libraries, in particular, occupy a strategic position in supporting teaching, learning, research, and community service within higher education institutions. Traditionally, these libraries were primarily concerned with acquiring, organizing, preserving, and disseminating information resources. However, the rapid evolution of digital technologies has expanded their responsibilities beyond conventional information management functions to include the provision of technology-enabled services that enhance scholarly communication, facilitate access to digital resources, and improve users' learning experiences. As users become more digitally inclined and demand faster, personalized, and seamless access to information, academic libraries are increasingly expected to deploy intelligent systems capable of supporting these emerging needs.

Hussain (2020) noted that librarians and information professionals now operate within highly dynamic technological environments characterized by continuous innovation and changing user expectations.

One technological innovation that has attracted considerable attention in recent years is Artificial Intelligence (AI). Artificial Intelligence represents one of the most transformative developments of the Fourth Industrial Revolution because of its capacity to simulate aspects of human intelligence and perform tasks that traditionally require human cognitive abilities. AI encompasses a wide range of technologies, including machine learning, natural language processing, computer vision, robotics, and deep learning, which enable computer systems to analyse data, identify patterns, make predictions, generate insights, and automate complex operations. Fernandez (2016) described AI as the simulation of intelligent human behaviour through computer algorithms, while Ogunode, Edinoh, and Okolie (2023) explained that AI enables machines to learn, reason, understand language, solve problems, and perform cognitive tasks with minimal human intervention. Similarly, Nwadinobi, Etele, Ezebube, Monyei, and Ukpere (2024) emphasized that AI systems are increasingly being developed to facilitate activities that contribute to social, economic, and institutional development. The growing capabilities of AI have consequently positioned it as a valuable tool for improving efficiency, accuracy, and decision-making across various sectors, including education and libraries.

Within library environments, Artificial Intelligence is increasingly being explored as a means of improving operational efficiency and enhancing service delivery. AI-powered applications have been utilized to provide personalized information services, support information retrieval, automate repetitive tasks, and improve users' interactions with library systems. Emerging applications such as chatbots, recommendation systems, automated indexing tools, and predictive analytics have demonstrated the potential to transform traditional library operations into more responsive and efficient services. According to Echedom and Okuonghae (2021), AI has become a significant driver of transformation within academic libraries by creating opportunities for innovation and

improving service effectiveness. These developments suggest that AI has the potential to reshape both technical and user-oriented services within contemporary libraries.

Among the technical functions of libraries, cataloguing remains fundamental to effective information organization and access. Cataloguing provides the bibliographic structure through which users discover, identify, select, and retrieve information resources. Although the principles underlying knowledge organization have existed for centuries, formal cataloguing practices in Nigeria evolved alongside the development of Western education and modern library systems. Before the introduction of formal library institutions, indigenous communities relied on oral traditions, symbols, and cultural artefacts to preserve and transmit knowledge across generations. These traditional methods represented early forms of information organization and reflected the importance attached to knowledge preservation within Nigerian society. Olubiyo (2023) and Ekenna and Samuel (2021) acknowledged that indigenous approaches to knowledge organization contributed significantly to information management despite differing substantially from contemporary cataloguing standards. The establishment of modern libraries during the colonial period subsequently introduced structured bibliographic control and standardized cataloguing practices into Nigerian librarianship.

Despite its importance, conventional cataloguing has often been criticized for being labour-intensive, time-consuming, and susceptible to inconsistencies arising from manual processing. In many libraries, the increasing volume and complexity of information resources have placed enormous pressure on cataloguers, thereby necessitating more efficient approaches to bibliographic organization. The emergence of Artificial Intelligence

offers opportunities to address these challenges through automated metadata generation, intelligent classification support, and improved consistency in cataloguing decisions. Isiaka et al. (2024) and Jayavadivel et al. (2024) argued that AI technologies facilitate scalability, efficiency, and accuracy in cataloguing processes. Narayanan (2024) further observed that machine learning algorithms can process large volumes of bibliographic data and automatically generate metadata, thereby enhancing resource discoverability and reducing the workload associated with routine cataloguing tasks. Such capabilities are particularly relevant within the Nigerian context, where many university libraries continue to contend with inadequate staffing, limited financial resources, and increasing information demands. Beyond technical services, the effectiveness of university libraries also depends substantially on the productivity of their workforce. Staff productivity reflects the extent to which library personnel efficiently utilize available resources, professional competencies, and technological tools to achieve organizational objectives and satisfy users' information needs. Productive library staff are characterized by their ability to perform assigned responsibilities accurately, efficiently, and within acceptable timeframes while maintaining high standards of service delivery. Oladele and Yusuf (2024) observed that staff productivity is reflected in the effective execution of cataloguing activities, user support services, and information resource management. Similarly, Nwafor and Adekunle (2023) described staff productivity as the efficient application of professional expertise and available technologies to achieve optimal service outcomes. Enhancing staff productivity is therefore essential for improving organizational effectiveness, promoting user satisfaction, and sustaining quality service delivery in university libraries.

The application of Artificial Intelligence presents significant prospects for facilitating both enhanced cataloguing efficiency and staff productivity in university libraries. By automating routine tasks, reducing human errors, improving the consistency of bibliographic records, and enabling staff to focus on more specialized responsibilities, AI can contribute to more effective library operations. Nevertheless, the extent to which these technologies are currently being applied within university libraries in Benue State remains unclear. Understanding the level of AI application in these libraries is therefore necessary for informing institutional policies, capacity-building initiatives, and future investments aimed at strengthening library services within the rapidly evolving digital environment.

Statement of the Problem

University Libraries play indispensable roles in supporting teaching, learning, and research through the effective organization, preservation, and dissemination of information resources. To achieve these functions efficiently, cataloguing activities and staff productivity remain fundamental components of quality library service delivery. In contemporary library practice, the application of emerging technologies, including Artificial Intelligence (AI), has increasingly been promoted as a means of facilitating technical operations and improving workflow efficiency. However, evidence from practice suggests that the level of application of these technologies differs considerably across institutions and contexts.

In many libraries, particularly within developing countries, cataloguing activities continue to rely substantially on conventional methods that are often characterized by delays in processing information resources, inconsistencies in metadata creation, repetitive manual procedures, and increased workload for library personnel. Although AI-driven applications have gained prominence in library discourse and have been incorporated into various aspects of information management in some settings, their application in university libraries remains uneven and sometimes limited by contextual realities. Factors

such as inadequate technological infrastructure, unstable power supply, limited funding, insufficient technical expertise, and inadequate institutional support may constrain the adoption and effective application of AI technologies within library operations.

The situation appears particularly relevant in University Libraries in Benue State, Nigeria, where variations in technological capacity and resource availability may influence the extent to which AI applications are utilized for cataloguing activities and staff-related functions. Despite growing scholarly attention to library automation, digital technologies, and AI applications in libraries, existing studies in Nigeria have focused predominantly on automation practices, digital library initiatives, and the perceived benefits of emerging technologies. There is limited empirical evidence specifically addressing the extent to which Artificial Intelligence is applied for enhanced cataloguing efficiency and staff productivity in University Libraries in Benue State.

Consequently, the extent of the application of Artificial Intelligence for enhanced cataloguing efficiency and staff productivity in University Libraries in Benue State remains unclear. This lack of context-specific empirical evidence constitutes a knowledge gap that necessitated the present study.

Research Questions

The following research questions guided the study:

1. What is the extent of the application of Artificial Intelligence for enhanced cataloguing efficiency in University Libraries in Benue State?
2. What is the extent of the application of Artificial Intelligence for staff productivity in managing library and information resources in University Libraries in Benue State?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H₀₁: There is no significant difference in respondents' opinions on the application of Artificial Intelligence for enhanced cataloguing efficiency in University Libraries in Benue State.

H₀₂: There is no significant difference in respondents' opinions on the application of Artificial Intelligence for enhanced staff productivity in University Libraries in Benue State.

Review of Related Literature

Artificial Intelligence (AI) has evolved from early philosophical ideas about machine intelligence into a sophisticated interdisciplinary field that supports automation, learning, and decision-making. Early foundational work by Alan Turing, followed by the Dartmouth Conference of 1956, formally established AI as an academic discipline (Floridi, 2016; Haenlein & Kaplan, 2019). Since then, continuous advances in computational power, algorithms, and data availability have accelerated AI development and adoption across diverse sectors, including libraries, education, and healthcare. Contemporary AI systems are now capable of performing tasks that previously required human intelligence, thereby enhancing efficiency, accuracy, and productivity in organizational settings (Russell & Norvig, 2021).

Historically, AI research initially focused on symbolic reasoning and rule-based systems designed to replicate aspects of human cognition. However, limited computational capacity and inadequate data resources led to periods of reduced interest, commonly referred to as “AI winters.” The resurgence of AI in the late 1990s and early 2000s was driven by breakthroughs in machine learning, increased data availability, and improved computing capabilities (LeCun, Bengio, & Hinton, 2015). Recent developments include

DeepMind's AlphaGo defeating a world champion Go player and the emergence of advanced large language models such as ChatGPT, which have significantly transformed human-computer interaction through natural language processing (Silver et al., 2016; Brown et al., 2020; OpenAI, 2023).

Currently, AI has become an integral component of multiple sectors, including education, healthcare, transportation, finance, and information management. Its increasing adoption is attributed to its ability to support decision-making, automate routine processes, and enhance operational efficiency. AI systems are designed to learn from data, interpret patterns, solve problems, and adapt to dynamic environments in ways that resemble human cognition (Russell & Norvig, 2021). These capabilities have led to innovations such as facial recognition systems, intelligent virtual assistants, recommendation engines, and autonomous systems. Consequently, AI provides significant benefits, including improved accuracy, reduced human error, enhanced efficiency, continuous service availability, and effective performance in complex environments (Kanade, 2022; Davenport & Mittal, 2022; Rock 'n' Block, 2024).

In the library and information science domain, the organization of information resources remains a core function, making cataloguing and classification essential for effective service delivery. The adoption of standardized metadata frameworks such as MARC, BIBFRAME, and Dublin Core provides structured approaches for organizing both print and digital resources, thereby enhancing discoverability and access (Miller & Barham, 2023). Furthermore, advancements in integrated library systems, automation tools, and

linked data technologies have transformed cataloguing practices by improving efficiency, consistency, and interoperability among library databases (Edewor & Alonge, 2021; Kior & Okoro, 2022; Mandal & Sharma, 2022).

Beyond technological infrastructure, the effectiveness of library operations is largely dependent on the competence and adaptability of library personnel. The ability of staff to acquire new skills, embrace technological innovations, and respond to evolving user needs significantly influences service quality. Continuous professional development is therefore essential for strengthening librarians' competencies in areas such as digital resource management, information literacy instruction, and emerging technologies (Adeyemi & Bello, 2023; Shafack & Tabetando, 2022). In addition, supportive leadership and opportunities for career growth enhance staff motivation, innovation, and overall organizational effectiveness in academic libraries (Okike & Adetoro, 2023; Elaturoti & Oyewumi, 2022).

Staff productivity in university libraries refers to the efficiency with which library personnel carry out professional duties such as cataloguing, classification, reference services, collection development, and user support. The growing volume of digital information and increasing user expectations have intensified the need for improved efficiency in library operations. Consequently, AI technologies are being explored as tools for enhancing staff performance and service delivery. Through automation, intelligent data processing, and workflow optimization, AI can reduce repetitive tasks and enable library staff to focus on higher-level, value-added responsibilities (Akinola & Zubairu, 2023; Monyela & Tella, 2024). In addition, AI-driven metadata generation and machine learning

applications enhance consistency and accuracy in indexing and classification processes, thereby improving resource management in libraries (Kulkov, Dror, & Fire, 2023).

The application of AI extends beyond technical services to user-centered library functions. AI-powered chatbots and virtual assistants provide real-time responses to routine inquiries, thereby supporting continuous service delivery and reducing pressure on reference librarians (Yan et al., 2023). This allows professional staff to focus on complex research support and specialized information needs. Similarly, AI-based search engines and recommendation systems enhance information retrieval by improving relevance and accuracy, thereby enabling users to locate resources more efficiently (Olujimi & Ade-Ibijola, 2023; Akinyemi, 2024).

In addition, AI is increasingly applied in the management of physical library resources through automation and robotics. Technologies used in shelving, inventory control, and materials handling reduce the time and effort required for routine operational tasks. By automating repetitive functions, libraries can optimize human resources and allow staff to engage in more analytical, creative, and user-focused activities (Adesina & Zubairu, 2023; Omame & Alex-Nmecha, 2020). Thus, AI presents significant opportunities for improving staff productivity and overall library efficiency.

Empirical studies further support the positive impact of AI on library operations. Emeka and Afolabi (2023) investigated intelligent cataloguing systems in federal university libraries in South-East Nigeria and found that such systems improved resource retrieval

and user satisfaction. Similarly, Chinweoke and Yusuf (2023) examined machine-learning-based cataloguing systems and reported improved consistency and accuracy in bibliographic control. These findings highlight the relevance of AI in enhancing cataloguing efficiency.

Furthermore, Ezeaku and Yusuf (2022) found that AI-enabled technologies reduced routine workloads, improved service delivery, and enhanced data management accuracy among library personnel. This evidence suggests that AI has substantial potential to improve staff productivity and operational efficiency in academic library environments.

Methodology

The study adopted a descriptive survey research design. This design was considered appropriate because it enables the collection of data from a representative sample of respondents in order to describe existing conditions without manipulating variables.

The population of the study comprised 8,009 respondents, made up of 7,870 registered library users and 139 library staff drawn from three university libraries in Benue State, Nigeria. Specifically, Rev. Fr. Moses Orshio Adasu University Library had 5,833 registered users and 92 library staff; Joseph Sarwuan Tarka University Library had 1,170 registered users and 30 library staff; while the Federal University of Health Sciences, Otukpo Library had 867 registered users and 17 library staff.

A sample size of 240 respondents, consisting of both library staff and registered library users, was selected using the proportionate sampling technique. This technique ensured that respondents were drawn from each institution in proportion to their

population sizes, thereby guaranteeing fair representation of all categories of respondents across the selected university libraries.

Data were collected using a structured questionnaire titled *Application of Artificial Intelligence for Enhanced Cataloguing Efficiency and Staff Productivity Questionnaire (AAIECSPQ)*. The instrument was designed to elicit information on the extent of application of Artificial Intelligence in enhancing cataloguing efficiency and staff productivity in university libraries in Benue State.

The data collected were analysed using frequency counts, mean scores, and standard deviation to answer the research questions. A criterion mean of 2.50, based on a 4-point Likert scale, was used as the benchmark for decision-making. Mean scores of 2.50 and above were interpreted as agreement or high extent of application, while mean scores below 2.50 were interpreted as disagreement or low extent of application.

The hypotheses were tested using Chi-square (χ^2) goodness-of-fit statistics at the 0.05 level of significance. A p-value less than 0.05 led to the rejection of the null hypothesis, indicating a significant difference, while a p-value greater than or equal to 0.05 led to the acceptance of the null hypothesis, indicating no significant difference.

Table 1: Mean and Standard Deviation Scores on the Extent of Application of Artificial Intelligence for Enhanced Cataloguing Efficiency in University Libraries in Benue State (N = 240)

s/no	Item Description (N = 240)	SA	A	D	SD	$\bar{x}$	S.D	Decision
1	AI technologies are actively used to classify library materials in this library.	39	53	113	35	2.40	0.93	Disagree
2	AI tools are applied regularly in the classification of books and resources.	49	56	92	43	2.46	1.01	Disagree
3	Staff frequently use AI systems to assign classification numbers to resources.	46	55	117	22	2.52	0.90	Agree
4	AI applications are integrated into the library's classification workflow.	22	69	119	30	2.35	0.81	Disagree
5	AI improves the speed and accuracy of classification in this University Library.	39	86	97	18	2.61	0.85	Agree
6	The library management supports and encourages the use of AI in classification processes.	20	41	152	27	2.22	0.75	Disagree
Cluster							2.43	0.88
								Disagree

Source: Filed work, 2025

The results presented in Table 1 indicate that the extent of application of Artificial Intelligence for enhanced cataloguing efficiency in university libraries in Benue State is generally low. This is evidenced by the cluster mean score of **2.43**, which falls below the criterion mean of 2.50, indicating that AI technologies are not widely applied in cataloguing operations within the libraries studied.

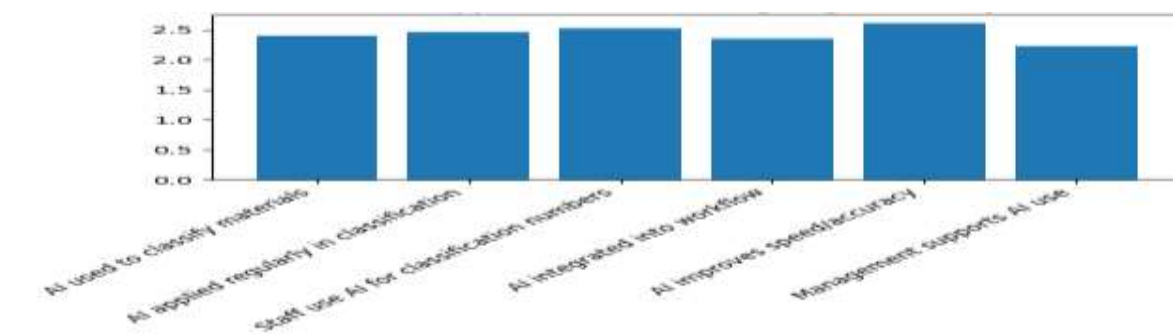
However, item-by-item analysis reveals that respondents agreed that AI improves the speed and accuracy of classification ($\bar{x} = 2.61$) and that staff occasionally use AI systems to assign classification numbers to library resources ($\bar{x} = 2.52$). Despite these isolated positive responses, most of the items recorded mean scores below the criterion mean of 2.50, indicating a generally low level of AI application in cataloguing processes.

The findings further show that there is limited management support for the application of AI in cataloguing activities ($\bar{x} = 2.22$) and low integration of AI technologies into cataloguing workflows ($\bar{x} = 2.35$). This suggests that the adoption of AI in cataloguing remains minimal and not fully institutionalized. This situation may be attributed to factors such as inadequate technological infrastructure, insufficient staff training, and limited institutional commitment to the deployment of AI-driven systems in library operations.

This finding is inconsistent with the study of Chinweoke and Yusuf (2023), which reported that machine-learning-based systems enhanced consistency and improved the accuracy of cataloguing decisions. The disparity in findings may be explained by differences in technological infrastructure, levels of AI adoption, staff competencies, and institutional readiness across the libraries studied.

Figure1: Extent of Application of Artificial Intelligence for Enhance Cataloguing Efficiency

The cluster mean score of **2.43** further confirms that the extent of application of Artificial Intelligence for enhanced cataloguing efficiency in university libraries in Benue State is **low**, as it falls below the criterion mean of 2.50.



Research Question 2: What is the extent of application of Artificial Intelligence for staff productivity in managing library and information resources in university libraries in Benue State?

Table 2: Mean and Standard Deviation Scores on the Extent of Application of Artificial Intelligence for Staff Productivity in Managing Library and Information Resources in University Libraries in Benue State

s/no	Item Description (N = 240)	SA	A	D	SD	$\bar{x}$	S.D	Decision
7	AI is being used to identify and prioritize the most needed library resources.	39	93	65	43	2.53	0.97	Agree
8	AI applications help ensure fair and balanced distribution of library materials.	86	39	83	32	2.35	1.09	Agree
9	Data on library usage is analyzed by AI to guide resource acquisition decisions.	71	60	74	35	2.70	1.05	Agree
10	AI tools are used to forecast future demands for resources based on historical patterns.	38	88	57	57	2.45	1.02	Disagree
11	AI systems highlight underutilized materials, helping reduce wasteful spending.	80	48	74	38	2.41	1.09	Disagree
12	Strategic planning for resource allocation is supported through AI-based insights.	40	62	97	41	2.42	0.96	Disagree
Cluster						2.48	1.03	Low Extent

Source: Filed work, 2025

The results presented in Table 2 indicate that the extent of application of Artificial Intelligence for staff productivity in managing library and information resources in university libraries in Benue State is generally low. This is evidenced by the cluster mean score of **2.48**, which falls slightly below the criterion mean of 2.50, suggesting a low level of AI application in supporting staff productivity.

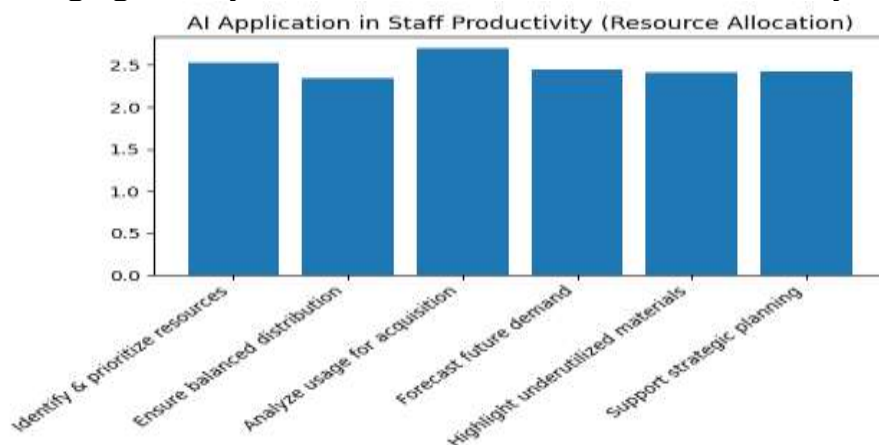
Item-by-item analysis reveals that respondents agreed that AI is used to analyse library usage data to support acquisition decisions ($\bar{x} = 2.70$) and to identify and prioritize needed library resources ($\bar{x} = 2.53$). These findings suggest that AI is moderately applied in decision-support functions related to resource management.

However, respondents disagreed that AI is used to forecast future resource demands ($\bar{x} = 2.45$), identify underutilized materials ($\bar{x} = 2.41$), and support strategic planning for resource allocation ($\bar{x} = 2.42$). This indicates that more advanced and predictive applications of AI in library management are not yet widely implemented.

Overall, the findings suggest that while some aspects of AI are utilized in library resource management, its application remains limited and largely underdeveloped. This situation may be attributed to inadequate technical infrastructure, insufficient ICT support systems, and low levels of staff awareness and competence in the use of AI technologies.

This finding is not consistent with that of Lawani and Tanko (2023), who reported that AI applications significantly enhance staff productivity through automation of routine tasks, improved data accuracy, and predictive analytics. The difference in findings may be due to variations in the level of AI deployment, institutional readiness, and technological support available in the libraries studied.

Figure 2: Extent of Application of Artificial Intelligence for Staff Productivity in Managing Library and Information Resources in University Libraries in Benue State



The cluster mean score of **2.48** indicates that the extent of application of Artificial Intelligence for staff productivity in university libraries in Benue State is **low**, as it falls below the criterion mean of 2.50.

Hypothesis 1: There is no significant difference in respondents' opinions on the application of Artificial Intelligence for enhanced cataloguing efficiency in university libraries in Benue State.

Table 3: Chi-Square Analysis of Respondents' Opinions on the Application of Artificial Intelligence for Enhanced Cataloguing Efficiency in University Libraries in Benue State

Responses	Fo	Fe	P	Df	x ² Cal.	Remark
SA	15	60.0	.082	3	4.733 ^a	Accepted
A	1	60.0				
D	47	60.0				
SD	177	60.0				
Total	240					

Source: Filed work, 2025

The results in Table 3 show a calculated Chi-Square value of **4.733** with a p-value of **0.082**.

Since the p-value is greater than the 0.05 level of significance, the null hypothesis was **accepted**. This implies that there is no significant difference in respondents' opinions

regarding the application of Artificial Intelligence for enhanced cataloguing efficiency in university libraries in Benue State.

Hypothesis 2: There is no significant difference in respondents' opinions on the application of Artificial Intelligence for staff productivity in managing library and information resources in university libraries in Benue State.

Table 4: Chi-Square Analysis of Respondents' Opinions on the Application of Artificial Intelligence for Staff Productivity in Managing Library and Information Resources in University Libraries in Benue State

Responses	Fo	Fe	P	Df	x ² Cal.	Remark
SA	77	60.0				
A	72	60.0	.067	3	5.700 ^a	Sign.
D	32	60.0				
SD	59	60.0				
Total	240					

Source: Filed work, 2025

The results in Table 4 show a calculated Chi-Square value of **5.700** and a p-value of **0.067**.

Since the p-value is greater than the 0.05 level of significance, the null hypothesis was **accepted**. This indicates that there is no significant difference in respondents' opinions regarding the application of Artificial Intelligence for staff productivity in managing library and information resources in university libraries in Benue State.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. University library management should strengthen the application and integration of Artificial Intelligence technologies in cataloguing operations to enhance efficiency and consistency in bibliographic processes.
2. Regular training, workshops, and continuous professional development programmes should be organized to improve librarians' knowledge and competencies in the application of Artificial Intelligence tools.

3. University authorities should provide adequate ICT infrastructure, including reliable internet connectivity, stable power supply, and modern computing facilities, to support the effective application of Artificial Intelligence in library operations.
4. Government agencies and university management should allocate sufficient funding for the acquisition, implementation, and maintenance of Artificial Intelligence technologies in university libraries.
5. University libraries should establish partnerships with technology providers and professional bodies to facilitate knowledge sharing, technical support, and sustainable adoption of Artificial Intelligence applications.
6. University libraries should develop institutional policies and strategic frameworks to guide the adoption and implementation of Artificial Intelligence in library operations.

Conclusion

The study concluded that the application of Artificial Intelligence for enhanced cataloguing efficiency and staff productivity in university libraries in Benue State is at a low level. Although Artificial Intelligence has the potential to improve cataloguing processes and enhance staff productivity, its application in the libraries studied remains limited.

This situation is attributed to factors such as inadequate infrastructure, insufficient funding, limited staff competencies, and weak institutional support. Therefore, greater investment in technological infrastructure, capacity building for library staff, and stronger institutional commitment are required to enhance the effective application of Artificial Intelligence in university library operations.

References

- Akinola, S., & Zubairu, M. (2023). Emerging technologies and staff productivity in Nigerian libraries. *International Journal of Library Studies*, 9(3), 101–115.
- Arora, D., Bansal, A., Kumar, N., & Suri, A. (2020). Invigorating libraries with application of artificial intelligence. *Library Philosophy and Practice*, 3630. <https://digitalcommons.unl.edu/libphilprac3630> Chapter 8

- Chinweoke, N., & Yusuf, A. (2023). Machine learning suggestion systems in cataloguing in federal university libraries in South West Nigeria. *Nigerian Journal of Library Innovation*, 11(2), 66–84.
- Echedom, A. U., & Okuonghae, O. (2021). Transforming academic library operations in Africa with artificial intelligence: Opportunities and challenges: A review paper. *New Review of Academic Librarianship*, 27(2), 243–255. <https://doi.org/10.1080/13614533.2021.1906715>
- Edewor, N., & Alonge, A. (2021). Metadata standards and information retrieval in digital libraries. *African Journal of Library and Information Science*, 31(1), 55–70.
- Emeka, U., & Afolabi, K. (2023). Intelligent catalogues and accessibility in federal university libraries, South-East Nigeria. *Journal of Academic Librarianship in Africa*, 14(2), 120–138.
- Ezeaku, L., & Yusuf, M. (2022). Technological innovations and staff efficiency in polytechnic libraries in South-South Nigeria: The role of artificial intelligence. *Library Progress International*, 42(1), 89–105.
- Fernandez, P. (2016). Through the looking glass: Envisioning new library technologies: How artificial intelligence will impact libraries. *Library Hi Tech News*, 33(5), 5–8. <https://doi.org/10.1108/LHTN-05-2016-0024>
- Floridi, L. (2016). *The fourth revolution: How the infosphere is reshaping human reality*. Oxford University Press.
- Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5–14.
- Isiaka, A. O., Soliu, A., Aremu, B. A., Bamidele, B. A., Saba-Jibril, S., & Ibitoye, A. R. (2024). The evolving role of libraries in the fourth industrial revolution: Navigating digital transformation. *Library Philosophy and Practice*. <https://digitalcommons.unl.edu/libphilprac/8141>.
- Kior, M., & Okoro, E. (2022). Integrated library systems and cataloguing efficiency. *Library Automation Journal*, 10(3), 88–102.
- Kulkov, I., Dror, G., & Fire, M. (2023). AI-based metadata generation in libraries. *Journal of Information Processing Systems*, 19(1), 55–72.
- Lawani, H., & Tanko, S. (2023). Artificial intelligence and staff productivity in university libraries in Northern Nigeria. *Nigerian Library Research Journal*, 17(1), 25–47.
- Mandal, S., & Sharma, R. (2022). Linked data technologies in modern libraries. *International Journal of Digital Libraries*, 23(2), 145–160.

- Miller, J., & Barham, R. (2023). Metadata standards and bibliographic control. *Library Metadata Quarterly*, 19(1), 12–28.
- Molaudzi, M., & Marutha, N. (2024). Conversational AI and reference services in academic libraries. *South African Journal of Libraries and Information Science*, 90(1), 1–12.
- Monyela, M., & Tella, A. (2024). Artificial intelligence and staff productivity in libraries. *Library Hi Tech News*, 41(2), 5–12.
- Nwadinobi, V.N., Etele, V.A., Ezebube, N.C., Monyei, F.E. & Ukpere, W.I. (2024). The impact of artificial intelligence on undergraduates' effectiveness in institutions of higher learning. *Educational Administration: Theory and Practice*, 30(4), 6989–6996. <https://doi.org/10.53555/kuey.v30i4.2501>
- Nwafor, O. J., & Adekunle, A. O. (2023). Staff productivity and performance evaluation in academic libraries. *Journal of Educational Information Systems*, 6(1), 41–53.
- Okike, B., & Adetoro, N. (2023). Professional development and staff motivation in academic libraries. *Library Philosophy and Practice*, 2023, 1–15.
- Oladele, F. O., & Yusuf, R. T. (2024). Library staff productivity and service efficiency in tertiary institutions. *Journal of Educational Development and Library Studies*, 9(2), 50–64.
- Ozioko, R. U., & Okpara, M. (2022). LIS 303 information retrieval (cataloguing II).
- Yan, X., et al. (2023). AI chatbots in academic library services. *Journal of Library Services and Technology*, 15(2), 77–91.